



CALL FOR APPLICATIONS

Bursaries for Master's Studies in Electronic Media

at MIH Media Laboratory
Stellenbosch University
2016-2017

Big Data · Natural Language Processing
Database Sharding · Software Agent AI
Network Protocols · Semantic Web
Cybernetics · Virtual Worlds · MMOGs
Search Technology · Dynamic Profiling
Game AI · Augmented Reality
Human Computer Interaction · Mobile
WiMax, Ad-Hoc and Mesh Networks

FAKULTEIT INGENIEURSWESE
FACULTY OF ENGINEERING

The Master's Research Programme in Electronic Media Technologies is a joint initiative by the Department Electrical and Electronic Engineering and the Department of Mathematical Sciences of Stellenbosch University and external sponsors.



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UNIVERSITY

Call for Applications: Bursaries for Master's Studies in Electronic Media

Qualifying candidates are cordially invited to apply for a position as full-time researcher in pursuit of the qualification **Master of Science (MSc)** or **Master of Science in Engineering (MEng)** in the field of Electronic Media at Stellenbosch University. Exceptional candidates from other disciplines (e.g. commerce or socio-informatics) may also be considered for sponsorship for the degree of their choice.

Successful candidates will receive a bursary towards living expenses, tuition, equipment and support requirements. Candidates will form part of a top-tier research team actively participating with international industry partners to research and develop next-generation technologies influencing human interaction with computers, the Web and each other via electronic media.

Research Areas

The following broad research areas have been identified as priorities to the research team:

- ∞ **Semantic Web technologies**, marrying the ways in which humans and computers understand the content of the Web, and the purposes of interacting with it.
- ∞ **Augmented Reality**, a field of computer research which deals with the combination of real-world and computer-generated data (virtual reality), where computer graphics objects are blended into real footage in real time.
- ∞ **Media Distribution**, moving beyond the 20th-century broadcast model of media dissemination towards view-on-demand and peer-to-peer television technologies.
- ∞ **WiMax, ad hoc and mesh networks**, progressing beyond a static picture of what networks look like and how data within such networks should be routed (including in this concept not just computer networks, but also networks of autonomous software entities).
- ∞ **Human-Computer interaction**, a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.
- ∞ **Gaming and collaborative environments**, such as the creation and representation of persistent virtual worlds, the creation of artificially intelligent agents within such worlds, the back-end technologies required to efficiently manage such environments, and the network protocols to enhance interaction with these virtual spaces. An important application of this research is MMOGs (massively multiplayer online games).
- ∞ **Electronic visualisation**, being the representation of complex data in a visual manner that maximises the rate of information flow from machine to human. This involves computer graphics and applied mathematics, particularly the application of graphical models.
- ∞ **Human language technologies**, including natural language processing, the processing of massive audio datasets, concept extraction, document clustering, meta-tagging and automated human language translation.
- ∞ **Search and massive data management**, such as the use of sharding to spread data over a vast array of servers, or the time-efficient processing of massive bodies of data. The focus here lies on the recognition of information patterns in data sets, and the grouping of data in information spaces based on recognised features. This also includes providing an interface to a group of items that enables users to specify criteria about an item of interest and finding the matching items.
- ∞ **Dynamic profiling**, by means of which possibly disparate data on individuals can be aggregated and interpreted in such a way that future behaviour may be predicted probabilistically. . The application of this research can allow software and web technologies to better anticipate users' needs, and support computing activities pro-actively.
- ∞ **Cloud computing**, including parallel programming and massive Web back-end technologies.

Requirements

The research team is looking for candidates who...

- ∞ ...have already completed, or are about to complete their **BSc** or **BEng** degrees in a related field (Electronic Engineering, Computer Science or Applied Mathematics). Exceptional candidates from other disciplines may also be considered.
- ∞ ...have an **exceptional undergraduate academic record**.
- ∞ ...have a solid background in **computer programming** and have a good idea of what **Software Engineering** is about.
- ∞ ...are **clever** and **creative**, and interact comfortably with other people, both online and irl.
- ∞ ...represent a **diversity** of backgrounds, cultures and interests.
- ∞ ...are **interested** in new forms of **media**.

Further information

If you require any additional information, please feel free to contact **Dr HA Engelbrecht**:

- ∞ E-mail: hebrecht@sun.ac.za
- ∞ Telephone: 021-808-2139 (office) or 021-808-2483 (secretary)
- ∞ Office: Room E408, Dept. E&E Engineering, Stellenbosch University (for a map, see <http://www.eng.sun.ac.za> and click on "Find us")

Checklist

- Full academic record attached
- C.V. attached
- Three essays attached
- Signed by applicant

The fine print

- ∞ A limited number of bursaries are available, and bursaries will be awarded on merit by a joint panel of Stellenbosch University academics and industry partners.
- ∞ The bursary award is subject to the acceptance of a bursary agreement and non-disclosure agreement.
- ∞ The exact number of bursaries to be awarded depends on the funding made available by industry sponsors.
- ∞ Successful candidates' final research topics will be formulated during joint consultation between the student, his/her supervisor and industry experts.

Application Form: Master's Studies in Electronic Media

Personal Details

Full name and surname		Student number (if applicable)	
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Tertiary qualifications	Institution	Qualification	Year of completion
1.			
2.			
3.			

Nationality			
Current postal address			
E-mail address		Cellphone no.	
Telephone no.		Fax no.	
Area of interest for studies, or proposed research topic			
Details of any other bursaries / bursary obligations			

Signature		Date	
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Further instructions

- ∞ Attach the **full academic record** of your undergraduate studies, as well as records of any postgraduate studies (if applicable).
- ∞ Attach a complete **Curriculum Vitae (CV)** with additional details on both your academic and non-academic activities and achievements.
- ∞ Please write two short (preferable 1 page and not longer than 2 pages) on **BOTH** of the following topics:
 - The use of internet technology to affect positive transformation in South Africa**
 - Argue for/against the topic of “digital rights management and copyright”**
- ∞ **Email** applications to hebrecht@sun.ac.za, **fax** applications to 021-808-3951, or post by **regular mail** to:

Dr HA Engelbrecht
E408, Dept. E&E Engineering
Private Bag XI
7602 MATIELAND

- ∞ The **closing date for applications** is 30 September 2015